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ABSTRACT

The purpose of "What Works in Reading?" was to identify the factors that contribute most strongly to achievement growth in reading. The study, which investigated fourth graders in 25 schools, was run jointly by the Philadelphia School District and the Federal Reserve Bank of Philadelphia, and the respect and understanding that developed between the two groups were basic to the study's implementation. Information was collected and computerized in five categories: the individual child and each child's principal, classroom teacher, reading teacher, and school. The results of 500 multiple regression equations identified variables in each of the five categories (15 in all) that made a difference in reading. Certain variables considered important in the past were found not to affect achievement. The study became news immediately. Perhaps its major impact was on the school district's "A Blueprint for Academic Achievment," 10 of whose specific recommended actions flowed directly from the research report, with an equal number at least tangentially related. Unlike many studies, "What Works in Reading?" has had an impact. While the extent of the impact and the ultimate level of utilization remain to be seen, the study has succeeded as a catalyst for change where other such efforts have failed. (CMG)

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IMPACT OF "WHAT WORKS IN READING?"

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Educational policy decisions should not be developed without consideration of the controllability of the variables being studied. A certain number of variables will, by nature, be beyond the control or manipulation of any organization. Yet many factors that can be controlled are often ignored.

A number of major earlier studies concluded that the impact of educational factors was minimal and, in fact, noncontrollable factors, such as family background, provided the major impact upon pupil achievement.

The now famous Coleman Study (1966) showed, among other things, that the student's family background was the most critical factor in determining his or her achievement. Jensen's highly controversial work in the area of IQ (1969) ascribed a great part of a student's aptitude and achievement to genetic factors rather than to the impact of educational intervention. In the early 1970's, Christopher Jencks further muddied the waters with the publication of *Inequality*, in which he concluded that neither the quality of schooling nor family background had much effect on students' future earnings, but, rather, luck was the most critical variable.

If one were to accept as gospel the findings of any of these three studies, one might likely conclude that educational policy formulation was a waste of time and that very little of what educators do, in an attempt to serve children, is likely to be effective.

Fortunately, however, many of us do *not* accept such a conclusion. Many of us believe that schools can and do make a difference, and precisely that belief served as a basis for the study I've been asked to share with you this afternoon.

The results of "What Works in Reading?"—a joint School District/Federal Reserve Bank empirical study in Philadelphia—were released in June 1979. Though controversial, the study has sparked an

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enormous amount of national interest and attention. The purpose of the study was to determine what makes a difference in teaching children to read. The years of experience of many thousands of teachers have testified that no one, simple, magical solution could be expected. Therefore, the task of this study was to try to identify the factors that contributed most strongly to achievement growth in reading and, in particular, to appraise the relative merits of approaches in reading.

The study had its genesis in two independent efforts by the School District of Philadelphia and the Federal Reserve Bank of Philadelphia.

As part of its continuing activities, the Office of Research and Evaluation of the School District of Philadelphia had conducted several studies of reading practices in recent years. One study—that of a single school that had demonstrated remarkable progress in reading during the course of one school year—was a post hoc attempt to describe the reading effort in as much detail as possible. It was largely "a fishing expedition." The results were interesting, but they served primarily as an impetus for a more intensive look at successful reading practices.

A more extensive study, involving 15 "successful" schools, was conducted in 1974. This study involved interviews of administrators and students as well as the examination of a number of school characteristics. Though over 80 variables measuring these characteristics were examined, the results were again inconclusive. Variables could not be identified that differentiated the schools studied from the other "less successful" schools in the system.

At the same time, the Federal Reserve Bank of Philadelphia was conducting a study of its own. In 1975 it published a study of achievement growth in the Philadelphia schools that utilized econometric techniques. This effort was widely acclaimed, especially by economists, but was criticized within the School District of Philadelphia. Objections were raised on both a technical and an emotional level. After a period of heated interaction, it became evident that the School District had no intention of utilizing this study for policy development or decision-making purposes.

In late October of 1975, the Superintendent of Schools of Philadelphia and the President of the Federal Reserve Bank of Philadelphia were invited by the Deputy Mayor of Philadelphia to meet with him to discuss the recently released Federal Reserve study. Both

brought members of their staffs to the meeting. The general focus of the discussion that morning was what, if any, follow-up to the findings and recommendations of the Federal Reserve Bank report was being planned. It was suggested that, in spite of School District comments critical of certain of the technical procedures of the report, there was a considerable amount of promise in the methodology and implications for longer-range policy decisions.

An agreement was reached whereby the Office of Research and Evaluation of the School District and the Research Department of the Federal Reserve Bank would meet to discuss the development of a follow-up study utilizing, as a base, the methodology employed by the Federal Reserve Bank, but integrating within it the concerns and learning priorities of the School District. Shortly after this meeting at City Hall, the Executive Director of the Office of Research and Evaluation and the Research Officer and Economist of the Federal Reserve Bank met to discuss the possibilities for a new study.

Key staff members from both the Federal Reserve Bank and the School District met in a series of half-day work sessions to plan the study. At the outset, the tone was cordial but guarded, and the meetings were negotiating sessions as much as planning meetings.

Reasons for earlier disagreement quickly became evident. The nature of various school variables had to be clarified. In addition, differences in statistical terminology were a barrier. At one point, a staff member familiar with both multiple regression analysis and analysis of variance was brought in to "translate" the terms and concepts used.

As the work sessions progressed, they brought to participants a heightened awareness of each other's world. Eventually, a genuine mutual respect developed. Given what had occurred in the past, this understanding and regard were *sine qua non* for the implementation of this study.

Overview of the study

Some schools are more successful than others in reading achievement growth from one year to the next and in annual level of achievement. What are the reasons that one school has a higher score than another? Why do some students perform better than others? By collecting measures of possible reasons, one might be able to discrimi-

nate among reasons by virtue of their degree of association with the measure of success. In short, it is possible to compute the multiple regression between the achievement measure (the dependent variable) and the estimated measures of the hypothesized reasons (the predictors or independent variables).

This study was a search for variables associated with changes in achievement growth and an attempt to describe the associations in terms of socioeconomic conditions, educational inputs, and peer group characteristics. The cliche "correlation does not mean causation" is an appropriate caveat. However, in the world of educational policy, decisions must be made on the basis of the best available information. Therefore, policy implications were the end product of this study.

Schools were picked by rank-ordering all elementary schools by their overall average reading scores (1975, grades 1-4) and their overall gain scores (1974-1975, grades 1-4) in reading. Ten schools at the top and 10 at the bottom of both lists were selected. Five schools in the middle of both lists completed the sample of 25 schools.

All the fourth-grade pupils in the schools selected were included in the study. Fourth grade was chosen because it is the grade in which a large drop in test scores is typically observed, it is the highest grade found in all elementary schools, and the ability to read at that grade is importantly related to a student's subsequent progress.

Information was gathered by teams made up of the staff of the Office of Research and Evaluation and the Division of English/Reading Language Arts Education. These teams visited the schools involved and interviewed the principal, the teachers, the reading teachers, and the reading aides. A total of 25 principals, 25 reading teachers, 94 classroom teachers, and 68 reading aides were interviewed. In addition, team members gathered large amounts of information from each pupil's records.

All this information was checked and double-checked for accuracy and then placed on a computer file that contained 162 variables about each of 1,828 pupils. Later, various combinations of these separate items of information increased the total number of variables about each pupil to 245.

For each pupil, five kinds of variables were gathered:

1. Variables about the principal of the pupil's school
2. Variables about the reading teacher in the pupil's school

3. Variables about the pupil's classroom teacher
4. Variables about the pupil's school
5. Variables about the individual pupil

Once all the information about each pupil was placed on computer tape, a random sample of 25 percent of the pupils was removed from the file and put aside. This was kept as a cross-validation sample, which allowed the results to be double-checked.

Over 500 multiple regression equations were run on the large (75 percent) file. This involved trying out many different combinations of facts (equations) about the pupils to determine which combination was most closely related to gains in reading scores. After the equation that seemed to be most closely related to gain in reading scores was found, it was used on the cross-validation (25 percent) file. Findings that were the same in both cases could be reported with some confidence; those that were not could be presented for discussion and further study.

Key findings

The authors predicated the rationale of the study in part upon the notion that adding to the existing body of knowledge concerning successful practices in reading was only partially useful. The wealth of research in reading has resulted in both old and new ideas being layered upon one another. Very seldom has attention been paid to removing the irrelevant or unproductive. Since such "excess baggage" is often both detrimental to instruction and costly in terms of resources, "What Works in Reading?" attempted to identify variables that both did and *did not* make a difference in reading achievement.

Variables that make a difference. Based on the procedures described above, the following were found:

1. Some things about the *pupil* seemed to make a difference:
   - The better the pupil's attendance, the more the reading score increased.
   - The fewer unexcused absences, the more the reading score increased.

- Pupils who had attended kindergarten seemed to gain more than those who did not.

2. Some things about the *principal* seemed to make a difference:
   - Where principals had experience in the field of reading, the pupils achieved better.
   - The more the principal observed in the classroom, the better the pupils achieved.
3. Some things about the *school* seemed to make a difference:
   - When schools had more professional supportive staff per pupil, the pupils achieved better.
   - Pupils clearly achieved worst in K-6 schools; K-7 schools were best; K-8 and K-5 schools were in between.
4. Some things about the *classroom teacher* seemed to make a difference:
   - Where teachers had more pay periods without absences, the pupils achieved better.
   - Where teachers had more than one-year's experience teaching fourth grade, the pupils achieved better.
5. Some things about *reading instruction* seemed to make a difference:
   - Pupils being taught with the basal linguistic approach achieved distinctly better than pupils being taught with other reading approaches.
   - The more minutes a week of sustained silent reading, the better the pupils achieved.
   - The fewer reading aides per week, the better the pupils achieved.
   - Where teachers felt that, if given a choice, they would pick the same reading program again, the pupils achieved better.
   - Pupils in larger classes (up to 35) gained more than those in smaller classes (as few as 24).
   - Pupils in classes taught in a small-group/whole-class combination achieved better than pupils who were taught individually only, in small groups only, or as a whole class only.

Variables that make no difference. Though a number of things were found to make a difference, most did not. Certain of the variables that did not make a difference were emphasized because, in the past, they had been considered important. It was found that the following things did *not* affect pupil achievement:

1. The number of times a pupil moved since starting school
2. Being bussed to relieve overcrowding
3. The amount of administrative experience the principal had
4. Whether or not the prinicipal had a doctorate
5. The number of years the principal had been in the school
6. Whether the pupil came from a lower or higher income neighborhood
7. Whether the school had more or fewer pupils from lower income families
8. The race of the teacher
9. The number of years of experience of the teacher
10. The number of graduate courses in reading and language arts taken by the teacher
11. The number of minutes a day of reading instruction
12. The time of day reading was taught
13. The professional preparation and experience of the school reading teacher

Policy implications. Based on the findings of this study, it was recommended that the following action be considered:

1. Establish an outreach program to assure that as many children as possible have a kindergarten experience.
2. Explore expansion of the use of the basal linguistic reading approach.
3. Consider the establishment of a special task force to explore programs for, and develop intervention studies of, the lowest achieving pupils.
4. Develop or modify programs or policies to minimize pupil and teacher absenteeism.

5. Develop or modify programs or policies to increase the amount of teacher time that is spent in direct instructional contact with pupils.
6. Develop or modify programs or policies to increase the amount of time principals spend observing in a classroom.
7. Explore the development of programs to increase the amount of knowledge and experience in reading that potential principals have, prior to their appointments.
8. Explore reasons why the K-7 organization seemed to be associated with the greatest amount of pupil gain and K-6 the least.
9. Consider mandating a policy of daily sustained silent reading in all schools.
10. Initiate discussions with appropriate government officials directed toward the modification of current regulations to permit allocation of federal resources on a pupil-specific basis.

The study's impact

The very day the study was presented at a public Board of Education meeting in June 1979, it began making news. Though purely of local interest at first, as a result of a wire service story, it was featured in the Los Angeles *Times* the following week. By midsummer, over 1,000 inquiries had been received.

Local television and radio stations broadcast stories on the results of the study, with both of the all-news radio stations producing feature reports and four others taping brief interviews with the major authors. The three major daily metropolitan newspapers published extensive stories, each focusing on a somewhat different aspect, but all covering the major findings.

The *Inquirer* emphasized the "common pedagogical wisdom" of the study's results in its lead:

> What seemed obvious in the days of the little red school house has been confirmed by results of a major reading study released yesterday by the Federal Reserve Bank and the Philadelphia School District. Basically, the study shows that children learn to read more easily in relation to the quality of time they spend with their teachers.

The *Bulletin* also focused upon the contact between students, teachers, and principals:

> The overriding principle of the study—a deceptively simple one, according to its authors—is that the most effective reading teachers are those who maintain the closest and most continuous contact with their pupils and school principal.

However, it picked up on the term "short links" utilized in the Board presentation:

> "You need direct, short links—that's the payoff," said Anita A. Summers, a former Federal Reserve Bank economist and now a professor at the University of Pennsylvania's Wharton School. "When you introduce extra links, you're reducing effectiveness with diversionary tactics."

Following the initial local media coverage and the wire story filed by the Associated Press, a number of major educational periodicals reported the study's results. *Education USA*, the most widely circulated weekly education newsletter, devoted three of its eight pages to it. The lead article, "New Study Finds What Worked in Reading," focused upon the more potentially controversial findings and emphasized both what made *no* difference and what worked. A second article of the "analysis" variety was also included.

The *Education USA* articles created an enormous demand for the report. By the end of the summer, over 3,000 inquiries had been received. The "Newsfront" section of the first *Phi Delta Kappan* of the new school year (September 1979) featured the study in an article entitled, "What's the Best Way to Teach Reading? Here's a Surprise." As a result, 2,000 additional requests were received within the next eight weeks.

Perhaps the major impact of the study, however, took the form of what came to be erroneously viewed by many as a companion document to the report entitled, "A Blueprint for Academic Achievement." Two months prior to its release, the Superintendent anticipated the "Blueprint" in comments reported by *Education USA:*

> Philadelphia Schools Supt. Michael P. Marcase praised the researchers for their "significant findings," which, he said, would result in "specific recommendations" to the Board of Education for major changes in reading instruction. . . .

A blueprint for academic achievement

The "Blueprint," as the document came to be known, took the form of a 22-page draft document transmitted by the Superintendent of Schools to his Executive Cabinet for review, discussion, and refinement. The Superintendent's charge to his Cabinet was to "forge a blueprint for action" that could be presented to the Board of Education by December 1979.

The "Blueprint" was developed largely as a result of a charge to the School District's Office of Curriculum and Instruction to study "the problems of raising achievement, particularly in schools with greatest need." Unbeknown to the authors of "What Works in Reading?", the report of the Curriculum Office was integrated with the research study by other members of the Superintendent's staff. The result was an unexpected though pleasant surprise to the researchers, for the "Blueprint" had, indeed, drawn heavily upon their work. In his introductory memorandum, the Superintendent stated:

> . . . . I have read in-depth the research report, "What Works in Reading?". I believe it can prove to be one of the most significant reports on reading achievement in the recent history of public education, and I have included several of its recommendations in this document.

In actuality, 10 of the "Blueprint's" 36 specific recommended actions flowed directly from "What Works in Reading?", with an equal number at least tangentially related. The text of the "Blueprint" often made direct mention of the study. For example, the section of the "Blueprint" dealing with the importance of the principal's leadership in the school states:

> Nowhere was this proven more graphically than in the research report, "What Works in Reading?", which reported conclusive, statistical evidence that significantly more reading achievement took place in schools where the principal took a direct, active part in putting together the reading program and where the principal spent a good portion of his or her time in the classroom monitoring and motivating reading instruction.

In the section devoted to systemwide standards in curricular areas, the "Blueprint" refers to:

> . . . . one of the most powerful findings of the recent research, "What Works in Reading?", was the superiority of the basal linguistic approach to reading instruction. This method produced far more

achievement growth than did any other form of reading instruction in the fourth grade in the Philadelphia public schools.

And in discussing the need for direct instruction:

> "What Works in Reading?" also found that the kind of classroom organization that produced significantly greater achievement growth than any other was an organization where the teacher taught the whole group part of the time, then broke the class into clusters for small group instruction.
>
> Still another major finding was the benefit of silent reading which, according to the research, produced significant reading achievement growth.

The specific actions recommended by the "Blueprint for Academic Achievement" that can be directly traced to the findings and policy implications of "What Works in Reading?" include the following:

1. An executive institute for principals will be established focusing exclusively on leadership development in the instruction of basic skills.
2. Principals will reserve time during the instructional day to visit classrooms and other school areas where student activity is taking place.
3. Wherever possible, central office and district office meetings involving principals are to be scheduled when students are not in attendance at school.
4. The Office of Curriculum and Instruction will report, in detail, to the Superintendent of Schools its evaluation of the basal linguistic approach to reading instruction, together with its recommendation why this approach should, or should not, become the School District of Philadelphia's basic approach to the teaching of reading.
5. Several teams of supervisors will be established with expertise in improving basic skills instruction using an interdisciplinary approach. Teams will establish consistent continuing relationships with low-achieving schools and initiate a detailed plan for staff development emphasizing basic skills instruction in all curricular areas.
6. Principals will use local and central office resources to continually emphasize the importance of direct instruction. This em-

phasis will be implemented by the principal's frequent visits to observe classroom activities.

7. Aides will be used less in instructional roles and more in noninstructional areas like roll taking and other classroom management responsibilities.
8. The Office of Curriculum and Instruction will evaluate the whole-group/small-group classroom instruction process and why it should, or should not, become a standard form of reading instruction in our elementary schools.
9. The Office of Curriculum and Instruction will develop instructional processes in the basic skills, particularly in reading, utilizing significantly more silent reading than is now the custom.
10. A Task Force on Absenteeism will report to the Superintendent of Schools its recommendations for significantly decreasing teacher absenteeism.

Conclusions

"What Works in Reading?" was not just another piece of research. Unlike many studies that are politely accepted and then shelved to gather dust, this study has already had an impact. The extent of that impact and the ultimate level of utilization remain to be seen. The fact is, however, that "What Works in Reading?" has succeeded as a catalyst for change where other such efforts have failed.

The question remains, What next? I would suggest that the future looks bright. I base this statement not upon blind optimism, but upon three specific reasons:

1. The implementation of the "Blueprint for Academic Achievement," including specific recommendations that flowed from the "What Works in Reading?" study, will be monitored and its impact evaluated. This is critically important, for too often recommendations are made and never followed up on.

   The "Blueprint for Academic Achievement" actually served to institutionalize the type of study that created much of the impetus for its initial development. That document's final section deals with evaluation as a tool for achievement growth and emphasizes that:

> . . . it will be important for the Office of Research and Evaluation to conduct follow-up studies, which examine the effectiveness of various changes made to improve school achievement. These studies should look at specific recommendations and compare various overall strategies implemented in schools. This suggests that proposed changes should be implemented in a systematic way so that the effectiveness of different strategies can be measured and compared.

An introductory plan has been developed for the evaluation of the "Blueprint." The plan takes each of the objectives, and the specific actions associated with each objective, and prescribes an evaluation design that will provide an indication of the degree to which each objective (and the associated actions) has been realized. The designs have been developed in considerable detail and provide specific recommendations concerning documentation techniques and methods of data collection, responsibilities, services, products, clients, and, of course, a time frame.

2. A group has been convened to continue dealing with the potential impact of the "What Works in Reading?" study. Included in this group are members of the original committee assigned to consider the study's recommendations. Additional members have been added, however, to more heavily weight the group in the direction of school people. Principals and teachers now play a more vital role than ever.

   The focus of the group has been to evolve and recommend school pilot projects and to elicit follow-up studies. In the area of school pilot projects, the group has discussed the feasibility of selecting a smaller, more manageable set of action alternatives for implementation by a limited number of participating schools.

   Initial pilot sites, all elementary schools, are being considered for what is being conceptualized as an 18-month project. All schools throughout the system will be invited to participate, and those wishing to do so will be asked to develop a simple one-page proposal indicating the particular areas of investigation of interest to them. A hybrid version of the Far West Lab's interactive research and development model is what the group has in mind. The potential sites are being told at the outset that the likelihood of additional resources being made available is nil, and that they should focus on cost-free variables. The schools will be selected by the committee, and each will receive a variety of technical

assistance services including planning (assisting in the development of the pilot project's objectives), monitoring (the provision of feedback), evaluating objectives, and reviewing outcomes (the implementation, alternatives, and levels of achievement). The Office of Research and Evaluation will take the responsibility for the development of an evaluation design (including process and output) as well as the implementation of that evaluation. It will be up to the individual school principals and their staffs to stipulate the specific objectives of the pilot projects. The committee has also discussed the feasibility of participating in a number of follow-up studies in cooperation with universities, foundations, and government agencies. Among the topics of highest interest for such follow-up studies are reading aides, principals' behavior, characteristics of the basal linguistic approach, role of the school reading teacher, and within-classroom instructional techniques (grouping).

3. Both the City and the School District are faced with severe fiscal constraints. It may sound paradoxical to consider such a statement positive. In terms of the implementation and ultimate utilization of the "What Works in Reading?" study, however, a fiscal crisis may well establish precisely the type of environment necessary for such recommendations to be taken seriously. The time has come to deal very directly with "the politics of less," and the "What Works in Reading?" study may well provide the wherewithal to do so. Remember that the study provided an indication of both what did work and what did not. In doing so, its authors stated very directly that they were not making resource-intensive recommendations. In fact, the majority of the recommendations could be implemented at little or no cost, and those with a price tag attached might well be funded with the savings accrued by doing away with practices that have failed to demonstrate success. The study's recommendations were designed in advance to be palatable to the public school system.

In the final analysis, however, institutional acceptance is not entirely sufficient. Institutional demand for decision information is perhaps the single most vital factor in the translation of research and evaluation into educational policy.